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10/534,869	05/12/2005	Shinichi Yoshizawa	2005_0601A	6797

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EXAMINER	
YEN, ERIC L	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,869	YOSHIZAWA, SHINICHI	
	Examiner	Art Unit	
	ERIC YEN	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29,30,32-34,46,47,59 and 60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-30, 32-34, 46, 47, 59-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the Office Action mailed 12/10/08, applicant has submitted an amendment filed 2/26/09.

Claims 29-30, 32-34, 46, and 47 have been amended. Claims 26-28, 31, 35-45, and 48-58, have been cancelled. Neew Claims 59 and 60 have been added.

Response to Arguments

1. Applicant's arguments with respect to claims 29-30, 32-34, 46-47, have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 29-30, 32-34, 46-47, are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US 2003/0171931), in view of Nguyen et al. (US 6,263,309), hereafter Nguyen, and Rigazio et al. (US 6,526,379), hereafter Rigazio.

As per Claim 29, Chang teaches a standard model creating apparatus for creating a standard model which shows an acoustic characteristic having a specific attribute and is used for speech recognition in an electronic apparatus used by a user, the standard model creating apparatus comprising: (“recognition model… acoustic model… customized to a user”, paragraph 1; “frequencies”, paragraph 67), the standard model creating apparatus comprising:

a reference model storing unit configured to store a plurality of reference models which are models showing an acoustic characteristic having a specific attribute (“plurality of different cohort models”, paragraph 40; "enrollment data", paragraph 39; "selects the speakers... closest to enrollment data", paragraph 42; “plurality of different cohort models”, paragraph 40; "enrollment data", paragraph 39; "selects the speakers... closest to enrollment data", paragraph 42; “top N possible cohort models”, paragraph 51; where the speaker’s voice qualities are attributes that are targeted by speaker dependent recognizers)

a standard model creating unit configured to create the standard model by calculating parameters of the standard model using parameters of the plurality of reference models stored in said reference model storing unit (“parameters for possible cohorts are generated", paragraph 53; "modifies the parameters... using the parameters in the... cohort models", paragraph 57)

wherein said standard model creating unit includes: a standard model structure determining unit operable to determine a structure of the standard model which is to be created (“parameters for possible cohorts are generated",

paragraph 53; "modifies the parameters... using the parameters in the... cohort models", paragraph 57)

an initial standard model creating unit operable to determine initial values of the parameters specifying the standard model whose structure has been determined (“parameters for possible cohorts are generated", paragraph 53; "modifies the parameters... using the parameters in the... cohort models", paragraph 57)

a parameter estimating unit configured to estimate and calculate the parameters of the standard model so as to maximize or locally maximize a probability or likelihood of the standard model, whose initial values have been determined, with respect to the plurality of reference models (“parameters for possible cohorts are generated", paragraph 53; "modifies the parameters... using the parameters in the... cohort models", paragraph 57; “likelihood", paragraph 55)

Chang fails to teach the standard model creating apparatus using a probability model that expresses a frequency parameter showing an acoustic characteristic as an output probability, where the reference models are probability models, where the parameters are statistics, wherein the plurality of reference models and the standard model are expressed using at least one Gaussian distribution, and said standard model structure determining unit is operable to determine at least a number of Gaussian mixture distributions as the structure of the standard model.

Nguyen teaches the standard model creating apparatus using a probability model that expresses a frequency parameter showing an acoustic characteristic

as an output probability, where the reference models are probability models, where the parameters are statistics, wherein the plurality of reference models and the standard model are expressed using at least one Gaussian distribution, and said standard model structure determining unit is operable to determine at least a number of Gaussian mixture distributions as the structure of the standard model ("training speakers… speaker dependent [SD] models", col. 4, lines 38-52; "supervector for each speaker comprises an ordered list of parameters… corresponding to at least a portion of the parameters of the Hidden Markov models", col. 4, lines 53-64; "new speaker... compute statistics… each sound unit", col. 5, lines 42-56; "HMM… observable outputs… transition probabilities", col. 3, lines 17-43; "Gaussian distributions… probability distribution… Gaussian function… parameter-based speech modeling", col. 4, lines 3-36; "Alabama female accent", col. 7, lines 5-13; where parameters generally include frequency parameters when analyzing speech [speech is acoustic])

wherein the plurality of reference models and the standard model are expressed using at least one Gaussian distribution, and said standard model structure determining unit is operable to determine at least a number of Gaussian mixture distributions as the structure of the standard model ("training speakers… speaker dependent [SD] models", col. 4, lines 38-52; "supervector for each speaker comprises an ordered list of parameters… corresponding to at least a portion of the parameters of the Hidden Markov models", col. 4, lines 53-64; "new speaker... compute statistics… each sound unit", col. 5, lines 42-56; "HMM… observable outputs… transition probabilities", col. 3, lines 17-43; "Gaussian

distributions… probability distribution… Gaussian function… parameter-based speech modeling", col. 4, lines 3-36; "Alabama female accent", col. 7, lines 5-13; where Nguyen teaches the use of Gaussians in hidden markov models and so suggests where the Gaussians are what are adapted in a model)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Chang to include the teaching of Nguyen of the standard model creating apparatus using a probability model that expresses a frequency parameter showing an acoustic characteristic as an output probability, where the reference models are probability models, where the parameters are statistics, wherein the plurality of reference models and the standard model are expressed using at least one Gaussian distribution, and said standard model structure determining unit is operable to determine at least a number of Gaussian mixture distributions as the structure of the standard model, in order to facilitate quick speaker adaptation of models, as described by Nguyen (col. 1, lines 7-10; col. 1, lines 60-66).

Chang, in view of Nguyen, fail to teach the structure of the standard model is created based on specification information regarding specifications of the electronic apparatus.

Rigazio suggests the structure of the standard model is created based on specification information regarding specifications of the electronic apparatus ("different sets of Gaussians… recognizers with more sophisticated… large amount of memory… embedded systems and speech-enabled consumer products… do not have much memory or processing power to spare… reducing

the number of Gaussians", col. 1, lines 17-49; where Rigazio suggests tailoring the size [and therefore, the structure] of a model because certain devices cannot handle recognition models with large quantities of data).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Chang, in view of Nguyen, to include the teaching of Rigazio of the structure of the standard model is created based on specification information regarding specifications of the electronic apparatus, in order to not overburden certain devices, as described by Rigazio (col. 1, lines 38-49).

As per Claim 30, Chang, in view of Nguyen, fail to teach wherein the specification information indicates at least one of a type of an application program running on the electronic apparatus and specifications of the electronic apparatus.

Rigazio wherein the specification information indicates at least one of a type of an application program running on the electronic apparatus and specifications of the electronic apparatus ("different sets of Gaussians… recognizers with more sophisticated… large amount of memory… embedded systems and speech-enabled consumer products… do not have much memory or processing power to spare… reducing the number of Gaussians", col. 1, lines 17-49; where Rigazio suggests tailoring the size [and therefore, the structure] of a model because certain devices cannot handle recognition models with large quantities of data).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Chang, in view of Nguyen, to include the teaching of Rigazio of wherein the specification information indicates at least one of a type of an application program running on the electronic apparatus and specifications of the electronic apparatus, in order to not overburden certain devices, as described by Rigazio (col. 1, lines 38-49).

As per Claim 32, Chang suggests a specification information holding unit configured to store an application/specifications correspondence database showing a correspondence between an application program which uses the standard model and specifications of the standard model, wherein said standard model structure determining unit is configured to read specifications corresponding to an application program to be activated from the application/specifications correspondence database held by said specification information holding unit, and to determine the structure of the standard model based on the read specifications (“recognition model… acoustic model… customized to a user”, paragraph 1; “parameters for possible cohorts are generated", paragraph 53; "modifies the parameters... using the parameters in the... cohort models", paragraph 57; where it is known that computers have multiple users, and so it is obvious to store some sort of correspondence between the different users and their respective models, and to use the correct model when a corresponding user desires to use the recognition system).

As per Claim 33, Chang teaches a specification information creating unit configured to create the specification information, wherein said model structure determining unit is configured to determine the structure of the standard model based on the created specification information ("recognition model… acoustic model… customized to a user", paragraph 1; where knowledge of the user who the model is to be adapted for is obvious to indicate to the system).

As per Claim 34, Chang suggests wherein the standard model creating apparatus is connected to a terminal apparatus via a communication channel, and further comprises: an information receiving unit configured to receive the information from the terminal apparatus, wherein said standard model structure determining unit is configured to determine the structure of the standard model based on the received information ("input speech samples", paragraph 39; "remote computer", paragraph 34; "recognition model… acoustic model… customized to a user", paragraph 1; "enrollment data", paragraph 39; "selects the speakers... closest to enrollment data", paragraph 42; where the input speech receiving device can be a terminal)

Chang, in view of Nguyen, fail to where the information is specification information.

Rigazio where the information is specification information ("different sets of Gaussians… recognizers with more sophisticated… large amount of memory… embedded systems and speech-enabled consumer products… do not have much memory or processing power to spare… reducing the number of

Gaussians", col. 1, lines 17-49; where Rigazio suggests tailoring the size [and therefore, the structure] of a model because certain devices cannot handle recognition models with large quantities of data).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Chang, in view of Nguyen, to include the teaching of Rigazio of where the information is specification information, in order to not overburden certain devices, as described by Rigazio (col. 1, lines 38-49).

As per Claim 46-47, their limitations are similar to those in Claim 29, and so are rejected under similar rationale.

2. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang, in view of Nguyen and Rigazio, as applied to Claim 33, above, and further in view of Leggetter et al. (US 7,191,130), hereafter Leggetter.

As per Claim 59, Chang, in view of Nguyen, fail to teach wherein said specification information unit is configured to create the specification information with an N1 number of the Gaussian distributions, and to create the specification information with an N2 (>N1) number of the Gaussian distributions, and said standard model structure determining unit is configured to determine the number of the Gaussian mixture distributions according to the specification information created by said specification information creating unit.

Rigazio wherein said specification information unit is configured to create the specification information with an N1 number of the Gaussian distributions, and to create the specification information with an N2 (>N1) number of the Gaussian distributions, and said standard model structure determining unit is configured to determine the number of the Gaussian mixture distributions according to the specification information created by said specification information creating unit ("different sets of Gaussians… recognizers with more sophisticated… large amount of memory… embedded systems and speech-enabled consumer products… do not have much memory or processing power to spare… reducing the number of Gaussians", col. 1, lines 17-49; where Rigazio suggests tailoring the size [and therefore, the structure] of a model because certain devices cannot handle recognition models with large quantities of data).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Chang, in view of Nguyen, to include the teaching of Rigazio of wherein said specification information unit is configured to create the specification information with an N1 number of the Gaussian distributions, and to create the specification information with an N2 (>N1) number of the Gaussian distributions, and said standard model structure determining unit is configured to determine the number of the Gaussian mixture distributions according to the specification information created by said specification information creating unit, in order to not overburden certain devices, as described by Rigazio (col. 1, lines 38-49).

Chang, in view of Nguyen and Rigazio, fail to teach where less gaussians are used when an instruction that the electronic apparatus is to perform quick speech recognition is obtained from the user, and more Gaussians are used when an instruction that the electronic apparatus is to perform precise speech recognition is obtained from the user.

Leggetter suggests where less gaussians are used when an instruction that the electronic apparatus is to perform quick speech recognition is obtained from the user, and more Gaussians are used when an instruction that the electronic apparatus is to perform precise speech recognition is obtained from the user ("speech recognition systems… memory, speed, and accuracy can be traded off… less CPU resources… cost of lower average… accuracy", col. 1, lines 29-46; "configuration specifies a speech/accuracy… performance level… recognition is very fast, but less accurate… slow, and most accurate… frustrated users", col. 5, lines 13-36; where Leggetter suggests balancing based on what is needed [accuracy/speed], and also teaches where the preferred balance is determined based on caller/user expectations, and so suggests where the performance level trade-off is determined by a user).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Chang, in view of Nguyen and Rigazio, to include the teaching of Leggetter of where less gaussians are used when an instruction that the electronic apparatus is to perform quick speech recognition is obtained from the user, and more Gaussians are used when an instruction that the electronic apparatus is to perform precise speech recognition is obtained from

the user, in order to ensure that users are not frustrated by the system, as described by Leggetter (col. 5, lines 24-36).

Allowable Subject Matter

3. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not teach the equations in Claim 60.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

5.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC YEN whose telephone number is (571)272-4249. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EY 4/5/09

/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626